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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,487	10/24/2001	Eric A. Livesay	119929-1033	9415

7590 11/30/2004

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EXAMINER

FORMAN, BETTY J

ART UNIT	PAPER NUMBER
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1634

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/004,487	Applicant(s) LIVESAY ET AL.	
	Examiner BJ Forman	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) 59,60 and 74-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-58 and 61-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, Claims 1-58 and 61-73 in the reply filed on 10 September 2004 is acknowledged. The traversal is on the ground(s) that the office has failed "to provide a reason as to why the inventions are distinct" and the office has failed to make a prima facie cast that restriction is required because a thorough search of the subject matter of Groups I and II would necessarily include class 422, sub-class 68.1 and class 536, sub-class 25.3.

This is not found persuasive because as stated in the Restriction Requirement, according to MPEP § 806.05(e), restrictions are deemed proper if the inventions are distinct i.e. if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. And, as stated in the Restriction Requirement, in this case the apparatus of Invention I can be used to practice another and materially different process e.g. the apparatus can be used to print non-reactive materials onto a surface.

Furthermore, the Restriction Requirement provided an analysis of the search required for Groups I and II. As stated, a search of the subject matter of Invention I would encompass a search of apparatus components e.g. manifolds, drives, substrates, substrate compositions and structures, masks, and mask compositions and structures. In contrast, as search of the subject matter of Invention II would encompass a search of chemicals synthesis, methods and timing of chemical delivery and synthesis components. Hence, the searches for Groups I and II would not be co-extensive as asserted.

Applicant's traversal does not address or argue the analysis provided in the Restriction Requirement.

For all the reasons stated above, the requirement is still deemed proper and is therefore made FINAL.

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Claims 59-60 and 74-86 are withdrawn from prosecution.

Claims 1-58 and 61-73 are under prosecution.

Information Disclosure Statement

2. Applicant's IDS submitted 15 February 2002 is acknowledged. A copy of the initialed 1449 is enclosed with this action. The reference lined-through has not been considered because the reference is a non-English Language document.

Comments

3. The claims are drawn to an apparatus comprising a manifold and a linear drive. The claims contain numerous recitations of intended use for the apparatus and its components e.g. for combinatorial chemistry, to deliver chemicals, for controlling linear drive, delivers one or more chemicals for synthesis. Further the contents of the claimed components also describe an intended use (e.g. an acetonitrile manifold, anoxidizer manifold) but do not define or describe structural components of the manifold. For example, coffee does not define a coffee cup because the contents of the cup do not describe the cup. A coffee cup can contain tea, water, milk or any other liquid. Without further structural description or limitation, an intended use does not distinguish over the prior art.

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Additional claims define the substrate to be used with the apparatus. For example, Claims 9-25 and 45-55 depend from Claim 1 and describe elements of the substrate. However, the apparatus of Claim 1 does not comprise a substrate. In contrast, Claim 1 merely

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comprises a manifold and linear drive. Hence, the substrate elements of Claims 10-25 and 45-55 are interpreted as not further limiting the apparatus of Claim 1.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-25, 27, 29-32, 44-56 and 61-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Schultz et al (U.S. Patent No. 6,004,617, issued 21 December 1999).

Regarding Claim 1, Schultz et al disclose an apparatus comprising a manifold (#110) having one or more outlets positioned to deliver chemicals to a substrate (#118) and a linear drive for moving the substrate below the manifold (Column 18, lines 7-23 and Fig. 1).

Regarding Claim 2, Schultz et al disclose the apparatus wherein the manifold comprises one or more outlets that form linear delivery spray heads i.e. the dispenser is aligned (i.e. linear) with the reaction region to deliver reagents onto the substrate (Column 12, lines 1-64).

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Regarding Claim 3-7, as stated above, the intended use for the manifold does not define structural elements of the apparatus. As such the reagent delivery systems of Schultz are encompassed by the claimed manifolds (Column 12, lines 1-64).

Regarding Claim 8, Schultz et al disclose the apparatus further comprising a mask containing holes and positioned between the manifold and substrate (Column 18, lines 12-14, #114 and Fig. 1).

Regarding Claims 9-25 and 45-55, the claims depend from Claim 1 and describe elements of the substrate. However, as stated above, the apparatus of Claim 1 does not comprise a substrate. Therefore, the claimed substrate does not further limit the apparatus. Because Schultz teaches the apparatus of Claim 1, Schultz teaches the apparatus of Claims 1-25 and 45-55.

Regarding Claim 27, Schultz et al disclose the apparatus further comprising one or more reservoirs (e.g. #210, Fig. 6) in fluid communication with one or more manifolds (Column 22, lines 28-52-23).

Regarding Claim 29, Schultz et al disclose the apparatus further comprising one or more reservoirs (e.g. #210, Fig. 6) in fluid communication with one or more reservoirs and one or more valves (metering valve) control the flow of fluid from the reservoirs to the manifolds (Column 22, lines 28-52-23 and Column 35, lines 34-39).

Regarding Claim 30, Schultz et al disclose the apparatus further comprising a mask positioned between the manifold and substrate (Column 18, lines 12-14, #114 and Fig. 1).

Regarding Claim 31, Schultz et al disclose the apparatus wherein a mask is layered on the substrate e.g. photoresist or the mask directly contacts the substrate (Column 19, lines 2-25 and 41-43).

Regarding Claim 32, Schultz et al disclose the apparatus wherein the mask contains one or more through-holes and positioned over substrate (Column 19, lines 32-58, #114 and Fig. 1).

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Regarding Claim 44, Schultz et al disclose the apparatus further comprising a vacuum in communication with the substrate i.e. Torr turbo pump for lowering air pressure in reaction chamber (Column 39, lines 1-11).

Regarding Claim 56, Schultz et al disclose an apparatus comprising a substrate comprising one or more reaction sites (Column 13, lines 5-65), a manifold (#110) having one or more outlets positioned to deliver chemicals to a substrate (#118) and a linear drive for moving the substrate below the manifold (Column 18, lines 7-23 and Fig. 1).

Regarding Claim 61, Schultz et al disclose a mask comprising a non-reactive sheet (e.g. inorganic glass or plastics (Column 13, lines 15-25) having a top and bottom surface (Fig. 1) and through-holes that match position of wells (regions) on a substrate (Column 19, lines 32-46).

Regarding Claim 62-63, the instant claims are drawn to a mask having through-holes matching wells of a substrate wherein the substrate is a multiwell plate or filter plate. The mask of Claim 61 does not comprise the substrate. Hence the instantly claimed substrates do not further limit the mask of Claim 61. However, it is noted that Schultz teaches the through holes of the mask correspond to the reaction sites on the substrate (Column 19, lines 42-45) and they teach the reaction sites are depressions and separated by barrier or wall (i.e. wells, Column 7, lines 14-25).

Regarding Claim 64, Schultz et al disclose the mask comprises a "substantially" chemically non-reactive material i.e. inert material (Column 27, lines 54-59).

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6. Claims 1-7, 9-25, 27, 29 and 44-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayes et al (U.S. Patent No. 5,658,802, issued 19 August 1997).

Regarding Claim 1, Hayes et al disclose an apparatus comprising a manifold (#10) having one or more outlets (#20a-20l) positioned to deliver chemicals to a substrate (#80) and a linear drive (#84) for moving the substrate below the manifold (Column 3, lines 57-63; Column 4, lines 48-67; and Fig. 1).

Regarding Claim 2, Hayes et al disclose the apparatus wherein the manifold comprises one or more outlets that form linear delivery spray heads i.e. the fluid dispensers are aligned in a block and aligned over the substrate (Column 3, lines 57-63 and Fig. 1).

Regarding Claim 3-7, as stated above, the intended use for and/or contents of the manifold do not define structural elements of the apparatus. However, it is noted that Hayes specifically teaches their dispensers contain various components for chemical synthesis e.g. (Column 3, lines 48-57).

Regarding Claims 9-25 and 45-55, the claims depend from Claim 1 and describe elements of the substrate. However, as stated above, the apparatus of Claim 1 does not comprise a substrate. Therefore, the claimed substrate does not further limit the apparatus. Because Hayes teaches the apparatus of Claim 1, Hayes teaches the apparatus of Claims 1-25 and 45-55.

Regarding Claim 27, Hayes et al disclose the apparatus further comprising one or more reservoirs (#42, Fig. 1 & 2) in fluid communication with one or more manifolds (Column 4, lines 1-23).

Regarding Claim 29, Hayes et al disclose the apparatus further comprising one or more reservoirs (#42, Fig. 1 & 2) in fluid communication with one or more reservoirs and one or more valves (#58) control the flow of fluid from the reservoirs to the manifolds (Column 6, lines 57-65).

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Regarding Claim 44, Hayes et al disclose the apparatus further comprising a vacuum in communication with the substrate i.e. by applying negative pressure (vacuum) to the fluid delivery system for delivering fluid to the substrate, the apparatus comprises a vacuum "in communication with" the substrate as claimed (Column 4, lines 29-35).

7. Claims 61-63 and 70-71 are rejected under 35 U.S.C. 102(e) as being anticipated by Schleifer et al (U.S. Patent No. 6,309,828, filed 18 November 1998).

Regarding Claim 61, Schleifer et al disclose a mask (purification plate, Fig. 1C) comprising a non-reactive sheet having a top and bottom surface and one or more through holes that form an array matching the position on a substrate (Column 8, lines 32-40).

Regarding Claim 62-63, the instant claims are drawn to a mask having through-holes matching wells of a substrate wherein the substrate is a multiwell plate or filter plate. The mask of Claim 61 does not comprise the substrate. Hence the instantly claimed substrates do not further limit the mask of Claim 61. However, it is noted that Schleifer et al teach the through holes of the mask correspond to the sites on the substrate (Column 3, lines 44-47).

Regarding Claim 70, Schleifer et al disclose the mask wherein the through-holed have one or more nozzles (Fig. 1C).

Regarding Claim 71, Schleifer et al disclose the mask wherein the through-holed have one or more nozzles and have an angle that matches the wells of a multi-well plate (Fig. 1C). The term "matches" is a non-specific relative term that does not define or describe the angle. Therefore, the term is given its broadest reasonable interpretation to encompass the alignment of nozzles to wells/inlets of the printing plate (Fig. 1).

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Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (U.S. Patent No. 5,658,802, issued 19 August 1997) in view of Brennan (U.S. Patent No. 5,814,700, issued 29 September 1998).

Regarding Claims 26 and 28, Hayes et al disclose an apparatus comprising a manifold (#10) having one or more outlets (#20a-20l) positioned to deliver chemicals to a substrate (#80) and a linear drive (#84) for moving the substrate below the manifold (Column 3, lines 57-63; Column 4, lines 48-67; and Fig. 1). Hayes et al further teach the "controller" controls apparatus functions (Column 7, lines 7-39) but they are silent regarding the controller being a computer. However, computer controlled apparatus were well known and routinely practiced in the art at the time the claimed invention was made as taught by Brennan who teach a similar apparatus along with specifically designed software for computer controlled synthesis wherein the software facilitates simultaneous independent synthesis of polymers of different lengths and scale (Example 1 and Column 13, lines 50-55).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the computer and controlling software of Brennan to the apparatus of Hayes for the expected benefit of facilitating simultaneous independent synthesis

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of polymers of different lengths and scale as taught by Brennan (Example 1 and Column 13, lines 50-55).

9. Claims 26, 28, 57 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultz et al (U.S. Patent No. 6,004,617, issued 21 December 1999) in view of Brennan (U.S. Patent No. 5,814,700, issued 29 September 1998).

Regarding Claims 26 and 28, Schultz et al disclose an apparatus comprising a manifold (#110) having one or more outlets positioned to deliver chemicals to a substrate (#118) and a linear drive for moving the substrate below the manifold (Column 18, lines 7-23 and Fig. 1). Schultz et al further teach the apparatus comprises a substrate manipulator and provides precise positioning between the dispenser and substrate (Column 12, lines 39-54 and Column 18, lines 16-20) but they are silent regarding the controller being a computer. However, computer controlled apparatus were well known and routinely practiced in the art at the time the claimed invention was made as taught by Brennan who teach a similar apparatus along with specifically designed software for computer controlled synthesis wherein the software facilitates simultaneous independent synthesis of polymers of different lengths and scale (Example 1 and Column 13, lines 50-55).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the computer and controlling software of Brennan to the apparatus of Schultz for the expected benefit of facilitating simultaneous independent synthesis of polymers of different lengths and scale as taught by Brennan (Example 1 and Column 13, lines 50-55).

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Regarding Claim 57 and 58, Schultz et al disclose an apparatus comprising a substrate comprising one or more reaction sites (Column 13, lines 5-65), a manifold (#110) having one or more outlets positioned to deliver chemicals to a substrate (#118) and a linear drive for moving the substrate below the manifold (Column 18, lines 7-23 and Fig. 1) and further teach the apparatus comprising a vacuum in communication with the substrate i.e. Torr turbo pump for lowering air pressure in reaction chamber (Column 39, lines 1-11) but they are silent regarding the position of the vacuum.

However, Brennan teaches the similar device wherein a vacuum is positioned below the reaction sites whereby a pressure at the reaction site is optimized for minimizing reagent consumption thereby saving costs (Column 11, lines 47-60). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to position the vacuum source below the reaction site as taught by Brennan to the apparatus of Schultz et al for the expected benefit of optimizing conditions at the reaction site to thereby for minimize reagent consumption and save costs (Column 11, lines 47-60).

10. Claims 33-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultz et al (U.S. Patent No. 6,004,617, issued 21 December 1999).

Regarding Claim 33-43, Schultz et al teaches the mask comprises various compositions known in the art e.g. plastics, inorganic glasses, resins, polymers etc. (Column 19, lines 37-41). Schultz further teaches the droplets deposited are charged and deposited onto a charged substrate (Column 22, lines 16-41). While Schultz does not specifically teach the claimed mask composition, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to provide masks of the claimed compositions based on the broad

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suggestion of Schultz to do so (Column 19, lines 37-41). It would have been further obvious to provide the mask with a charge based on the charged substrate and droplet of Schultz for the obvious benefit of appropriate control of the charged droplet as it travels from the dispenser through the mask and onto the substrate.

11. Claims 64-69 and 72-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al (U.S. Patent No. 6,309,828, filed 18 November 1998).

Regarding Claim 64-69, Schleifer et al disclose a mask (purification plate, Fig. 1C) comprising a non-reactive sheet having a top and bottom surface and one or more through holes that form an array matching the position on a substrate (Column 8, lines 32-40).

Schleifer et al are silent regarding the composition of the purification plate. However, they teach their synthesis plate comprises components for purification e.g. polyethylene and other purification components (Column 7, lines 4-11 and Column 8, lines 38-40).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the purification plate of Schleifer et al to comprise the claimed compositions based on their similar function. The courts have stated that the greater the physical and chemical similarities between the claimed species and any species disclosed in the prior art, the greater the expectation that the claimed subject matter will function in an equivalent manner (see *Dillon*, 99 F.2d at 696, 16 USPQ2d at 1904). Therefore, one of ordinary skill in the art would have had a reasonable expectation of success for modification of the purification plate to contain the claimed compositions.

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Regarding Claim 72-73, Schleifer et al teaches the nozzles are aligned with the printing inlets (Column 8, lines 32-40) but are silent regarding the angle. However, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify nozzle angle to appropriately align with the printing plate to thereby efficiently transfer the solutions from one plate to the other as they desire.

Conclusion

12. No claim is allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables

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applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.


BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
November 29, 2004